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# Growth and Innovation in the Digital Era

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# ITIF: Who We Are

The Information Technology and Innovation Foundation is a think tank at the cutting edge of designing innovation policies and exploring how innovation drives boost growth and competitiveness. ITIF focuses on:

- Innovation processes, policy, and metrics,
- Internet, big data and ICT policy,
- ICT and economic productivity,
- Science and tech policy, and
- Innovation and trade policy.

# Today's Presentation

1

ICT and Growth

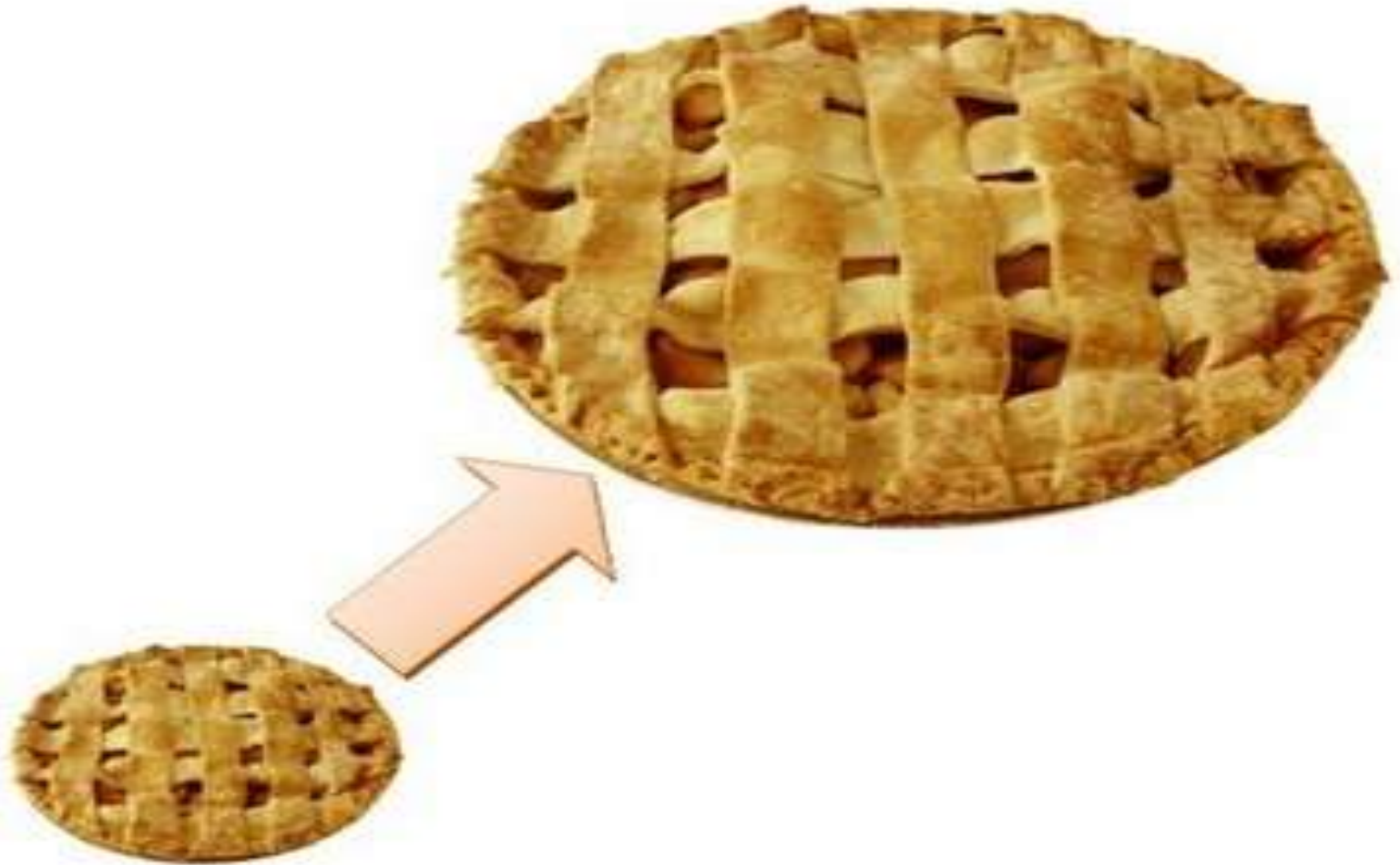
2

“Silicon Valley” or ICT-Enabled Economy?

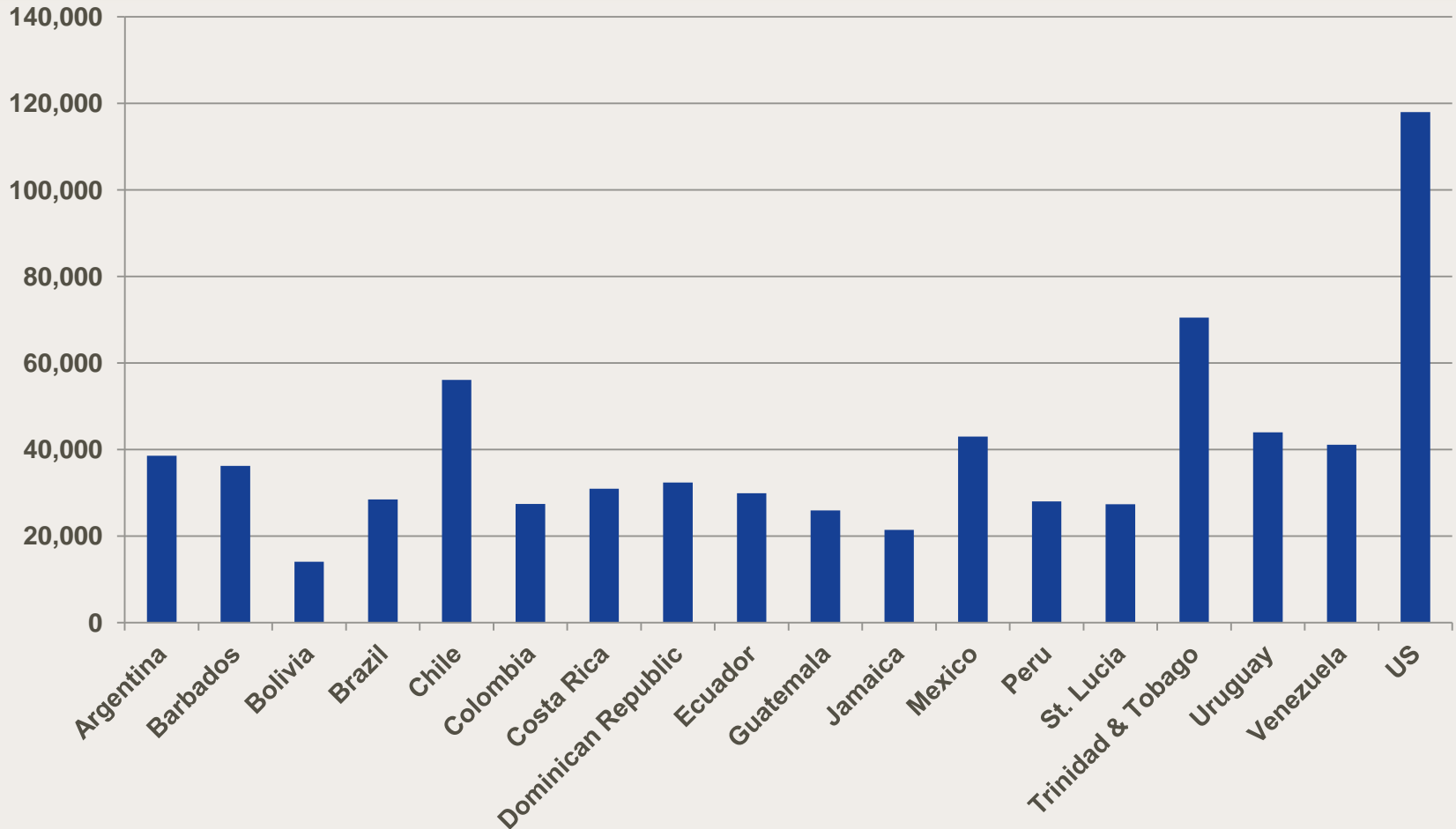
3

ICT Policy: Redistribution or Growth?

# Productivity Grows the “Pie”



# Productivity Differs by Nation



Productivity Per Person Employed, 2015 (PPP, US\$) (Conference Board, *Total Economy Data Base*)

# Where Does Productivity Come From?: Better Tools





# Today's Better Tools Are ICT Tools



# Moore's Law Drives the ICT Economy

- 1,215,500,000,000,000,000,000,000 transistors in 2014





# Transistors Growth Since 2000?

- A) 14.3 times
- B) 143 times
- C) 1,430 times
- D) 14,300 times



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- 1) \$5.50
- 2) \$55
- 3) \$550
- 4) \$5,500



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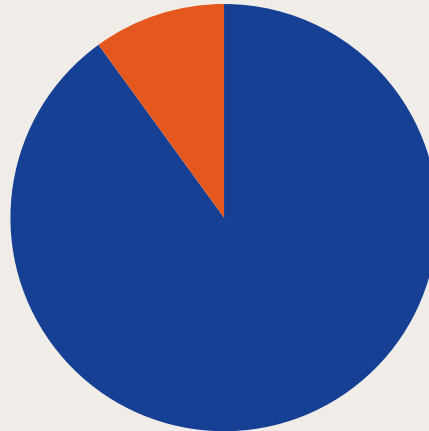
- 1) \$5.50
- 2) \$55
- 3) \$550
- 4) **\$5,500**



5 GBs cost \$5,500 in 1995 and \$1.5 billion in 1960

# What's More Important: Making or Using ICT Tools?

- Over 80% of benefits from ICT in the U.S. are related to its use by organizations, rather than its production by the ICT industry

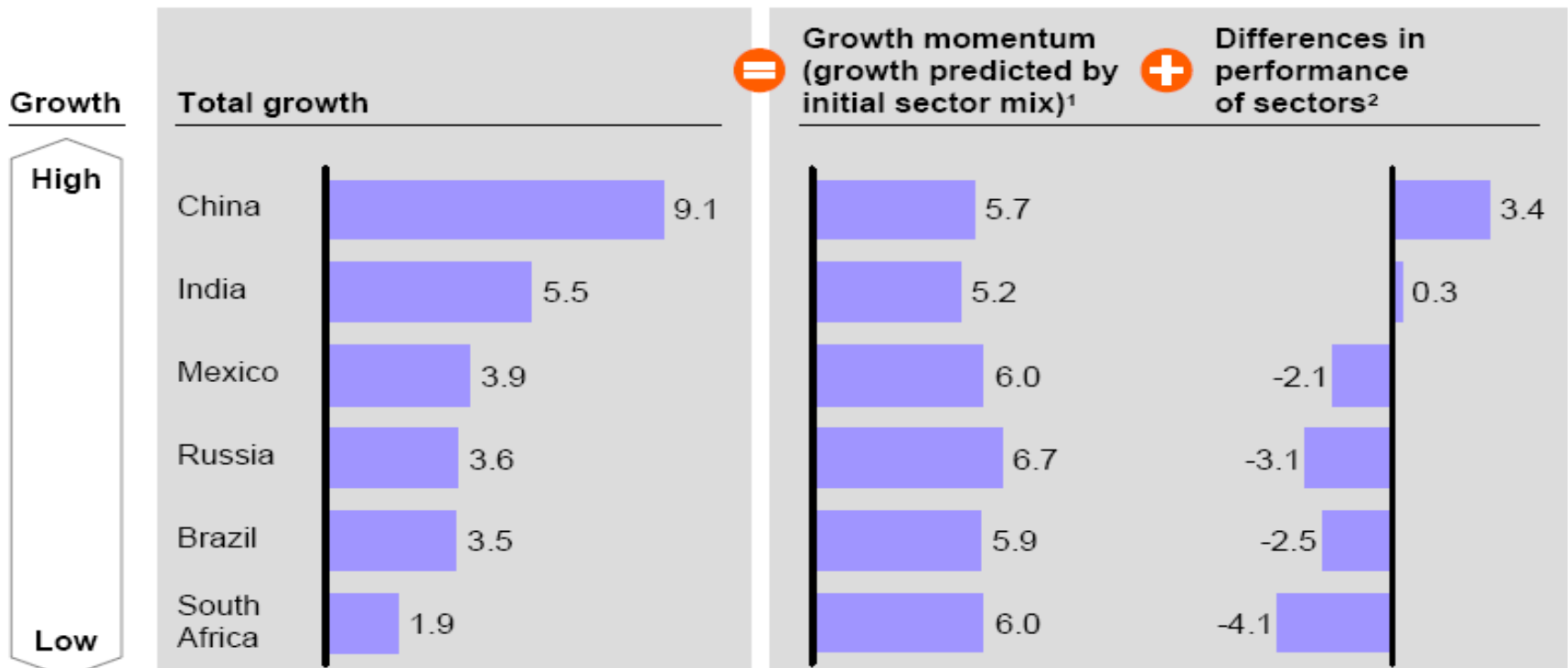




# Growth Within Sectors Matters Most

**Sector performance matters more than sector mix in developing countries as well.**

Contribution to total value added, 1995–2005  
Compound annual growth rate, %



1 Country growth rate calculated as if all sectors would have grown with the sector-specific growth rate average across all developing countries.

2 Actual country growth minus growth momentum of initial sector mix.

SOURCE: Global Insight; McKinsey Global Institute analysis

# ICT Drives Organizational Growth

- In large U.S. firms, \$1 dollar of IT capital is associated with \$25 of market value. \$1 of non-IT capital associated with \$1 of value
- Between 2006 and 2010, U.S. corporations that invested more in IT increased productivity three times faster.
- IT has 3 to 7 times more impact on productivity
- IT was responsible for 75% of U.S. productivity growth from 1995 to 2002, and 44% from 2000 to 2006
- A 10% increase in a country's IT capital stock adds approximately 0.45 percentage points to GDP

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# ICT Development vs. Deployment Policy Matrix

	Supports “Silicon Valley”	Hurts “Silicon Valley”
<b>Supports ICT Economy</b>	<ul style="list-style-type: none"> <li>• More spectrum</li> <li>• Tax incentives for ICT adoption</li> <li>• ICT skills development</li> <li>• Open data policies</li> <li>• Tax incentives for ICT adoption</li> <li>• Broadband deployment support</li> <li>• Digital literacy policies</li> <li>• E-government, including e-procurement</li> <li>• Digital transformation strategies (transportation, health care, etc.)</li> <li>• Support ICT platforms (mobile payments, digital signatures, etc.)</li> </ul>	
<b>Hurts ICT Economy</b>	<ul style="list-style-type: none"> <li>• ICT Tariffs</li> <li>• Data center localization requirements</li> <li>• Local content requirements</li> <li>• Domestic procurement preferences</li> </ul>	<ul style="list-style-type: none"> <li>• ICT Taxes</li> <li>• Cross Border Data Flow Limits</li> <li>• Labor market regulations</li> <li>• Product market regulations (e.g., ban on Uber)</li> <li>• Strict privacy regulations</li> <li>• Limits on FDI</li> <li>• Small business preferences</li> </ul>

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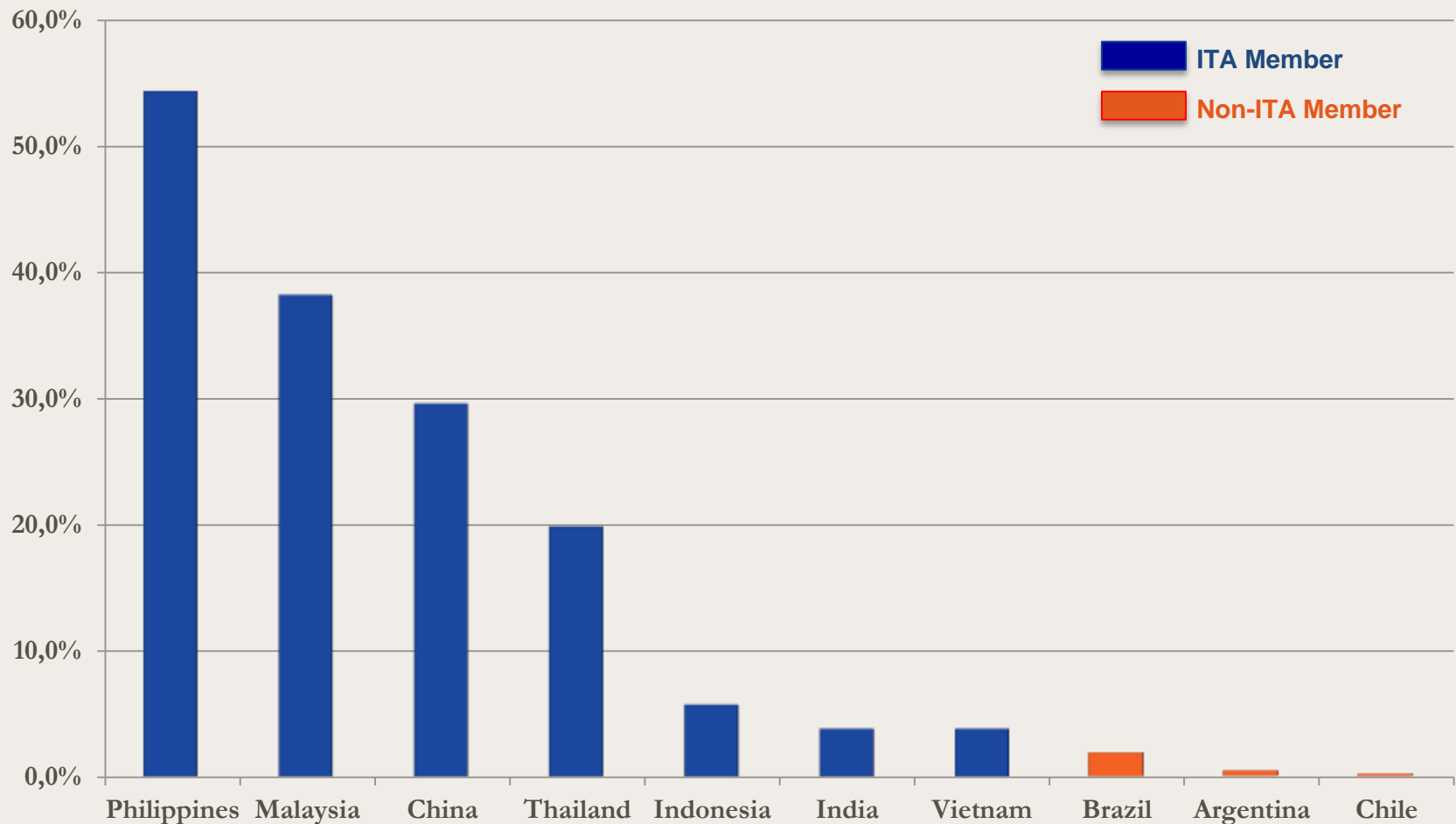


# ICT Development vs. Deployment Policy Matrix

	Supports “Silicon Valley”
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# Lower ICT Tariffs Drive ICT Exports

ICT Goods Exports as Percentage of Total Goods Exports, 2009



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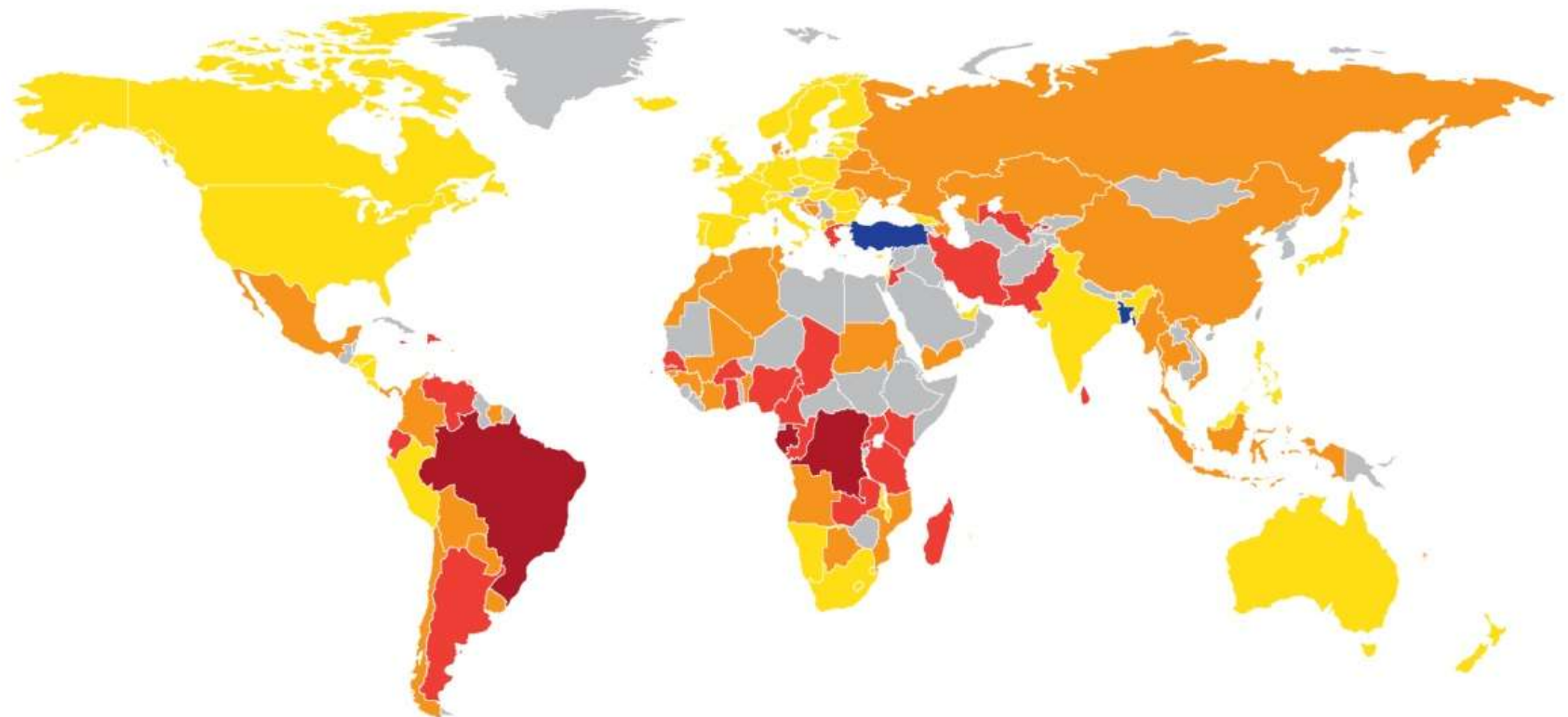
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# Keeping IT Prices Low is Key to Growth

- IT tariffs and discriminatory taxes sectors mean consumers/firms have to pay more while often receiving inferior products/services
- This makes downstream IT-using firms/sectors less competitive
- Diminishes productivity of financial, transportation, etc. sectors
- For every \$1 of tariffs India applied to imported computers, the country lost \$1.30 due to lost spillover effects. (Kaushik and Singh, 2004)
- For every 1 percent drop in price in ICT products, there is a 1.5 percent increase in demand. (Gurbaxani, 2003)
- Tariffs on IT products do not create a competitive domestic hardware industry, but they do limit adoption of ICT by keeping prices high.



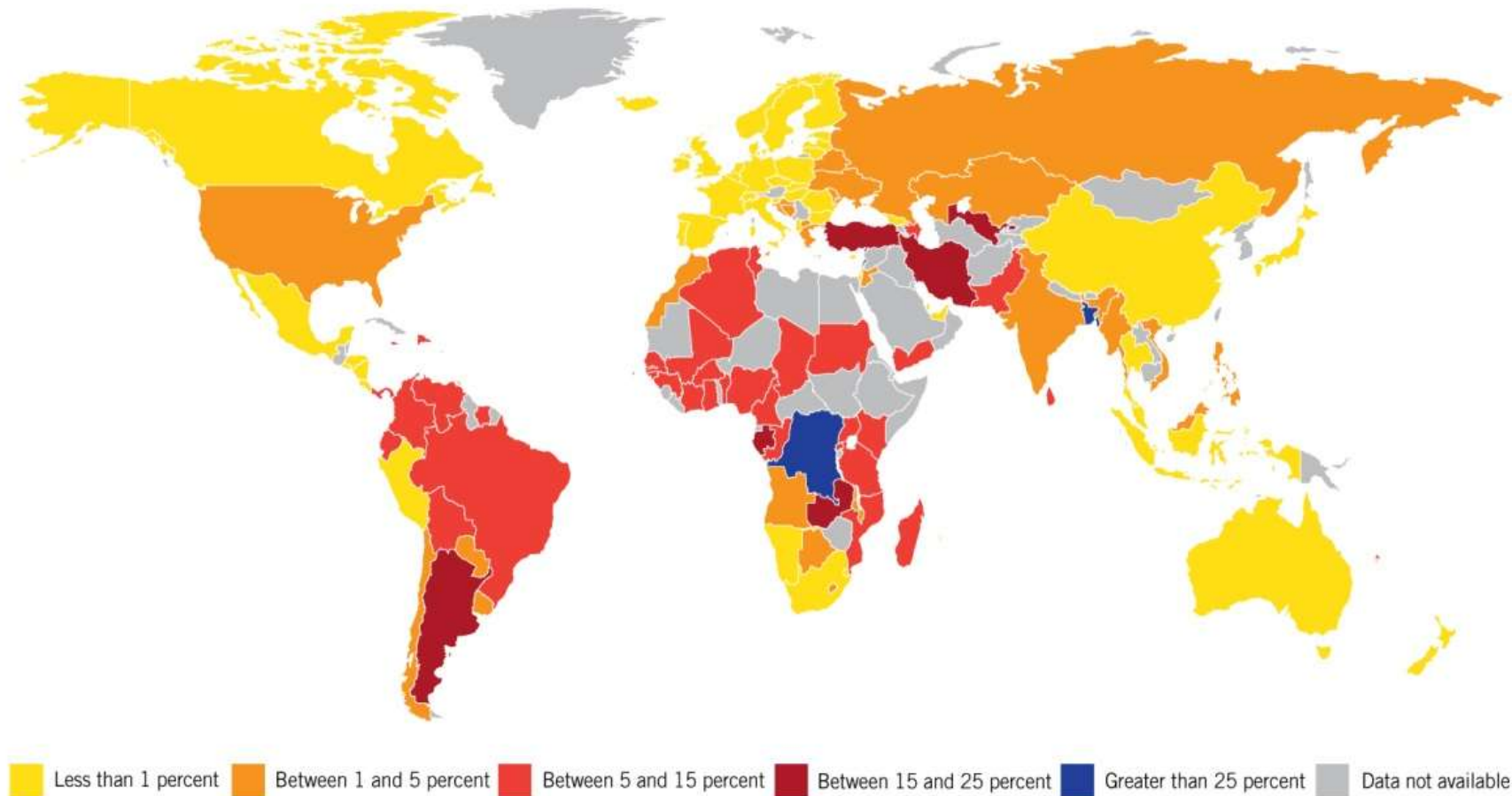
# Taxes and Tariffs for Consumer ICT Products and Services



Less than 1 percent   Between 1 and 5 percent   Between 5 and 15 percent   Between 15 and 25 percent   Greater than 25 percent   Data not available

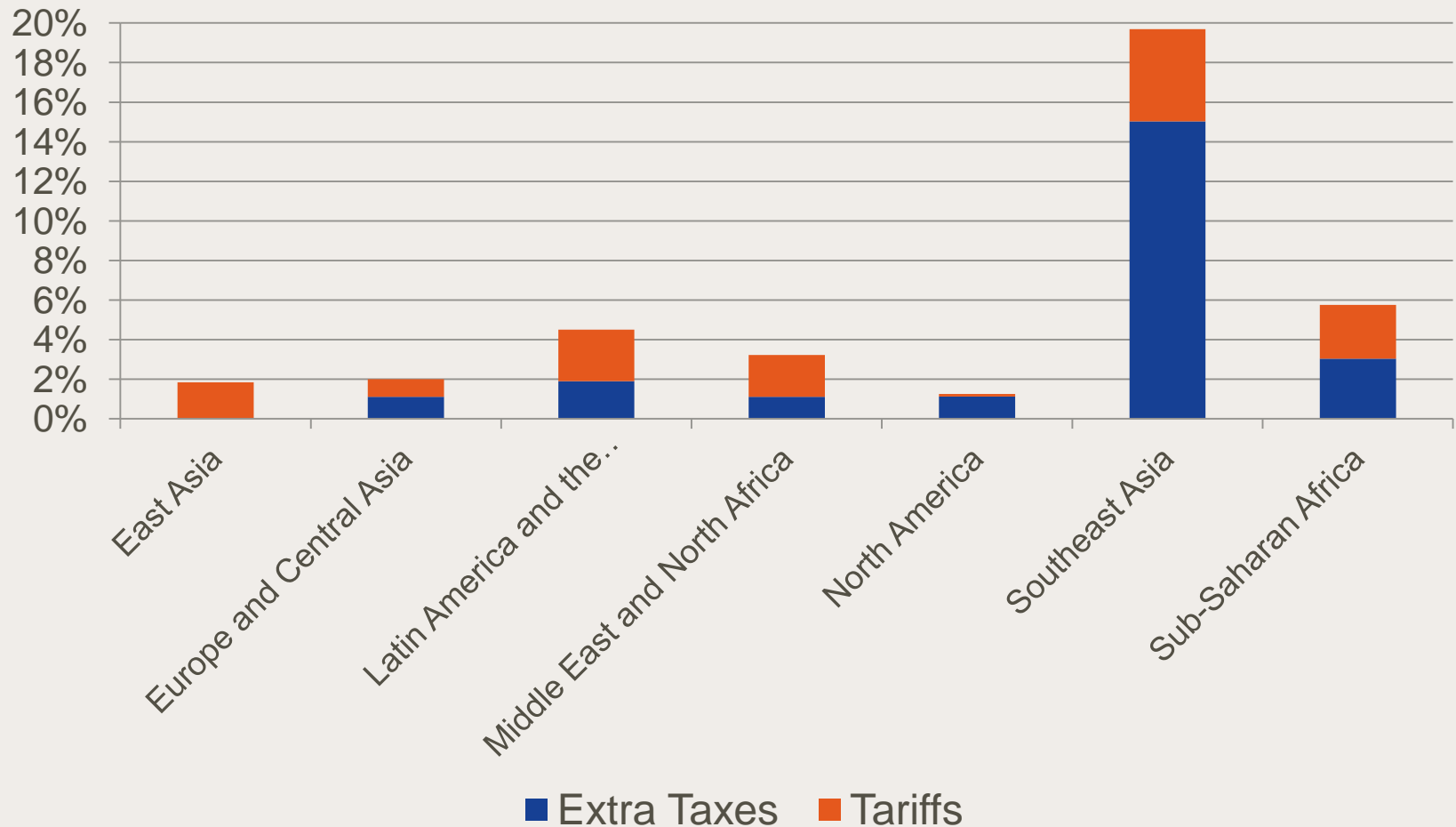
Ben Miller and Robert D. Atkinson, "Digital Drag: Ranking 125 Nations on Taxes and Tariffs on ICT Goods and Services," (Information Technology and Innovation Foundation, October 2014), <http://www.itif.org/publications/2014/10/24/digital-drag-ranking-125-nations-taxes-and-tariffs-ict-goods-and-services>.

# Taxes and Tariffs for Business-Use ICT Products and Services



Ben Miller and Robert D. Atkinson, "Digital Drag."

# Latin America and Caribbean Nations Impose Higher ICT Taxes/Tariffs Than N. America



Ben Miller and Robert D. Atkinson, "Digital Drag."

# ICT Development vs. Deployment Policy Matrix

	Hurts “Silicon Valley”
Hurts ICT Economy	<ul style="list-style-type: none"><li>• ICT Taxes</li><li>• Limits on Cross Border Data Flow Limits</li><li>• Labor market regulations</li><li>• Product market regulations (e.g., ban on Uber)</li><li>• Strict privacy regulations</li><li>• Limits on FDI</li><li>• Small business preferences</li></ul>

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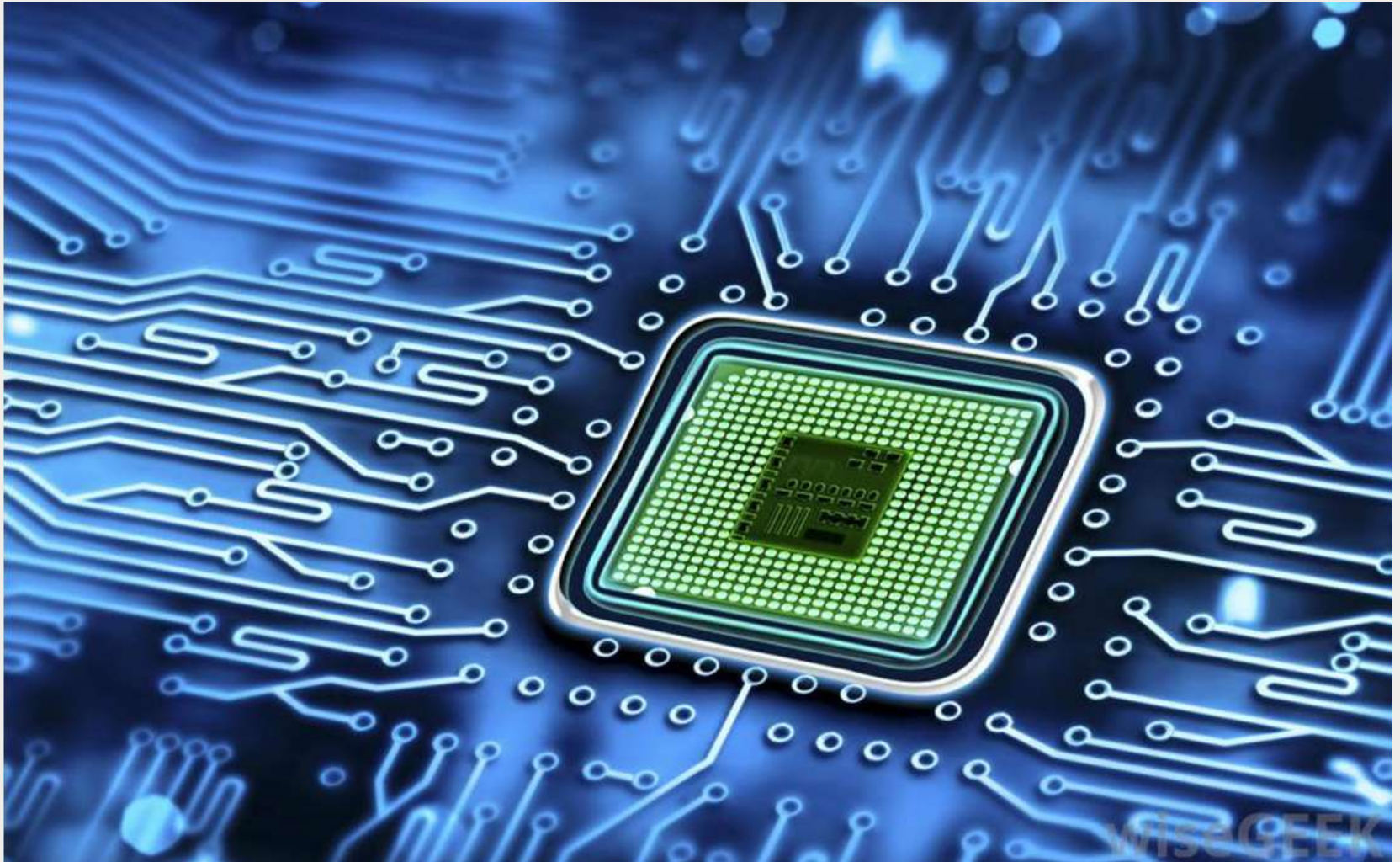
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# Competing Visions for ICT Policy? Growth or Redistribution?



# Digital Redistribution/Fairness Agenda

- Internet is principally a tool for *communications* by individuals
- Priority on digital adoption by *individuals*
- Regulation to protect *consumers*
- If focus is on enterprises, it's on *SMEs*
- Telecom *competition* to keep prices low

# Digital Growth Agenda

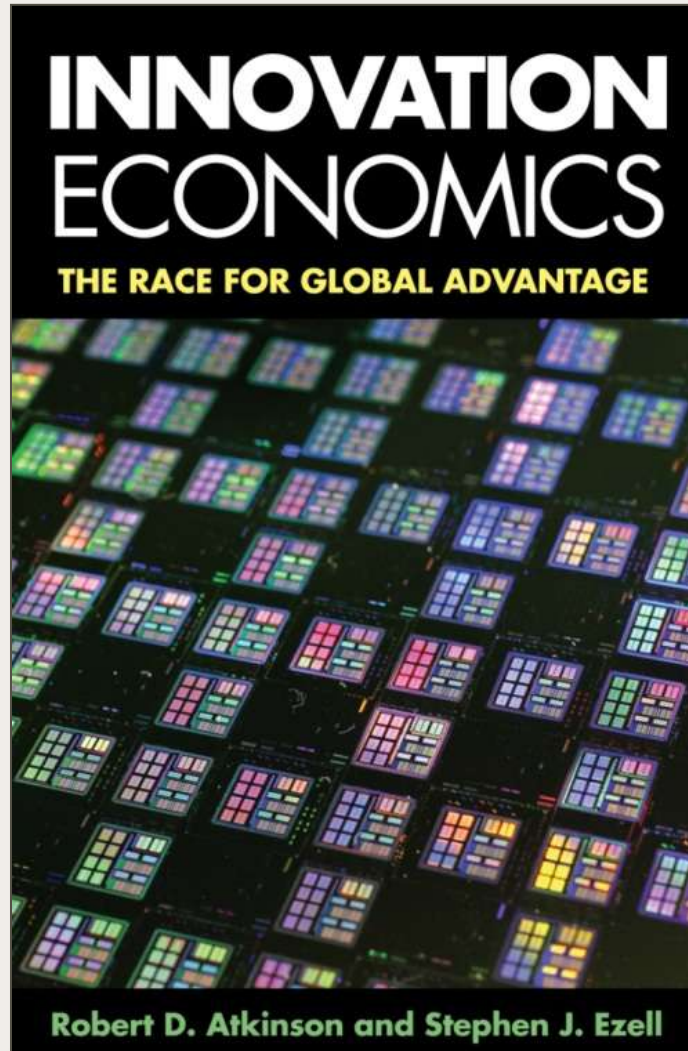
- Internet is principally a tool for *commerce* by enterprises
- Priority on digital adoption by *enterprises*
- Regulation to support *enterprise innovation*
- Support ICT use by *most productive enterprises*, regardless of size
- Focus on enabling telecom capital *investment*

# Won't Improved Productivity Cost Jobs?

- Reality: higher productivity leads to more, not fewer jobs
- In a study of the relationship between productivity and employment in developing-nation economies, the United Nations Industrial Development Organization finds that in fact, “productivity is the key to employment growth”<sup>1</sup>
- A 2005 World Bank survey of over 20,000 businesses in about 50 low-middle income countries found that firms using IT have faster sales and employment growth and also higher productivity

<sup>1</sup> Anders Isaksson, Thiam Hee Ng, and Ghislain Robyn, *Productivity in Developing Countries: Trends and Policies* (Vienna: UNIDO, 2005), 139

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*Thank You*

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